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22 August 2019

Mr. Will Geiger
Remedial Project Manager
U.S. Environmental Protection Agency, Region III
1650 Arch Street
Philadelphia, PA 19103-2029

Reference: 0042525

Subject: North Penn Area 2 Superfund Site
Progress Report for January 2019 - June 2019

Dear Mr. Geiger,

On behalf of AMETEK, Inc. (AMETEK) and Penn Color, Inc. (Settling Defendants), Environmental Resources Management, Inc. (ERM) hereby submits this progress report pursuant to Section X of the Consent Decree (Consent Decree) executed between the Settling Defendants and the United States of America and entered on 10 February 2011. This progress report covers the above-referenced period.

SUMMARY OF ACTIVITIES PERFORMED IN REFERENCED PERIOD

1. Recovery wells PW-3 and MW-2 were operated to recover volatile organic compound (VOC)-impacted groundwater. See the Summary of Data section below.

2. The Settling Defendants continued wetland and surface soil operation and maintenance (O&M) activities, including the following:
    a. ERM inspected the wetland and surface soil area restorations (plantings and seeded areas). These areas were found to be functioning consistent with the Remedial Action design.

3. The Settling Defendants continued groundwater O&M activities, including the following:
    a. ERM replaced the cycle counter at MW-2S on 25 March 2019.
    b. ERM conducted a Site-wide groundwater elevation survey (39 wells – MW-2S was unable to be gauged) on 1 May 2019.
    c. ERM collected surface water samples and surface water elevation measurements from four locations on 1 May 2019.
    d. ERM performed the annual groundwater sampling on Groups 1 and 2 wells (25 wells). Sampling began on 1 May 2019 and was completed on 10 May 2019.
    e. ERM replaced the PW-3 pump wet end and riser pipe on 26 June 2019.

4. The Settling Defendants began the construction of the sub-slab depressurization (SSD) system at Building 1.
    a. ERM completed sub-surface clearance (SSC) activities in March, including soft-dig locating of buried lines outside the building and the usage of a sewer camera to collect information on existing utilities beneath the building.
    b. ERM oversaw the horizontal boreholes installation for the SSD system. Drilling activities began on 12 June 2019 and completed on 28 June 2019.

5. The Settling Defendants conducted the following work related to perfluoroalkyl substances (PFAS).
    a. ERM submitted to USEPA the updated Sampling and Analysis Plan Addendum for Perfluoroalkyl Substances on 29 January 2019.
    b. ERM conducted groundwater sampling for PFAS at MW-2S and PW-3 on 25 March 2019.

SUMMARY OF DATA RECEIVED OR GENERATED IN REFERENCED PERIOD

1. Table 1 contains the groundwater sample analytical data for the annual groundwater sampling event conducted between 1 May 2019 and 10 May 2019. Results of this sampling event remain consistent with recent historical results. Group 1 wells, other than the recovery wells, continue to be below the remediation goals, which indicates that the groundwater capture system continues to be effective. The arsenic concentration of 15.2 µg/L in well perimeter MW-13D exceeded the arsenic cleanup standard. It should be noted that arsenic concentrations at MW-13D have been detected above the cleanup goal of 10 µg/L since prior to remedy implementation. However, following the remedy construction, the concentration has reduced from 20 µg/L to 15.2 µg/L suggesting that the remediation could be having a positive effect on this condition.

2. Table 2 contains the surface water sample analytical data for the surface water events conducted on 1 May 2019. All the surface water sample results were below the cleanup levels (Surface Water Criteria), which indicates the wetlands remediation work has been effective.

3. Tables 3 through 5 summarize the recent performance data for recovery wells PW-3 and MW-2. The most recent estimate of the amount of VOCs remaining in the bedrock groundwater is depicted on Figure A.

4. Table 6 contains the groundwater level and surface water level monitoring data collected on 1 May 2019.

5. Table 7 contains the groundwater PFAS sampling results.

6. Pumping rate and static water level monitoring data were evaluated to assure maintenance of hydraulic control over the contaminant plume. Figures 1 through 3 are potentiometric surface maps for respectively the shallow, intermediate, and deep wells and are based on the 1 May 2019 groundwater level monitoring. The figures indicate groundwater drawdown and capture is apparent.

SUMMARY OF DELIVERABLES SUBMITTED IN REFERENCED PERIOD

1. ERM submitted to USEPA the updated Sampling and Analysis Plan Addendum for Perfluoroalkyl Substances on 29 January 2019.
2. ERM submitted to USEPA the progress report for the second half of 2018 on 1 March 2019.
3. ERM submitted to USEPA the results of the March 2019 PFAS groundwater sampling on 26 June 2019.

ANTICIPATED ACTIVITIES FOR THE NEXT PERIOD

1. The Settling Defendants will continue groundwater RA activities, including the following:
    a. PW-3 and MW-2 pump maintenance and/or replacement will be performed as necessary.

b. PW-3 and MW-2 operations and pumping rates will be monitored.

2. The following monitoring and sampling events will be performed.
   a. Semiannual groundwater sampling of Group 1 wells (7 wells), site-wide wells water level gauging (40 wells), and stream gauging and sampling (4 locations) – anticipated for October/November 2019.

3. The second round of the groundwater sampling for PFAS compounds will be conducted after the wells are selected – anticipated for fall 2019.

4. The Settling Defendants will complete the installation of the SSD system at Building 1, perform system start-up and commissioning, and begin system operations.

SCHEDULE PERCENT COMPLETION AND DELAYS

1. Not applicable at this time.

MODIFICATIONS TO PLANS OR SCHEDULES

1. Other than the updated Sampling and Analysis Plan Addendum for Perfluoroalkyl Substances submitted on 29 January 2019, there are no modifications to the work plans or schedules at this time.

COMMUNITY RELATIONS

1. Not applicable at this time.

Please review this information and, if you have any questions, please call me at 484-913-0360 or Rich Dulcey at 609-403-7509.

Yours sincerely,

Jake Ferry, P.E.
Project Manager

Enclosures: Tables 1 through 7
Figures A and 1 through 3

cc: D. Armstrong, PADEP
T. Deeney, AMETEK
M. Berg, Madelaine R. Berg, Esq. LLC
W. Ponticello, Penn E&R
R. Dulcey, ERM

Table 1a
Groundwater Sampling Results - May 2019
North Penn Area 2 Superfund Site
Hatfield Township, Pennsylvania

		CLIENT ID:	MW-2S			MW-2I			MW-2D			MW-3A			MW-3B			DUP-20190507**			MW-3C			MW-3D		
		LAB ID:	1050123			1055950			1055951			1053057			1053056			1053059			1053055			1053058		
		COLLECTION DATE:	5/1/2019			5/10/2019			5/10/2019			5/7/2019			5/7/2019			5/7/2019			5/7/2019			5/7/2019		
		SAMPLE MATRIX:	Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater		
		SAMPLE UNITS:	µg/L			µg/L			µg/L			µg/L			µg/L			µg/L			µg/L			µg/L		
Analyte	Cleanup Standard* (µg/L)		Result	Q	MDL	Result	Q	MDL	Result	Q	MDL	Result	Q	MDL	Result	Q	MDL	Result	Q	MDL	Result	Q	MDL	Result	Q	MDL
Volatile Organic Compounds																										
Carbon Tetrachloride	5		**41**		0.2	ND		0.2	ND		0.2	ND		0.2	**2**		0.2	ND		0.2	ND		0.2	ND		0.2
1,2-Dichloroethane	5		ND		2	ND		2	ND		2	ND		2	ND		2	ND		2	ND		2	ND		2
1,1- Dichloroethene	7		**330**		2	**560**		1	**7**		0.2	**3**		0.2	**33**		0.2	**34**		0.2	**130**		0.2	**120**		0.2
cis-1,2-Dichloroethene	70		**11**		0.2	**260**		0.2	ND		0.2	**18**		0.2	**12**		0.2	**12**		0.2	**38**		0.2	**7**		0.2
Tetrachloroethene	5		**20**		0.2	**0.2**	**J**	0.2	**0.3**	**J**	0.2	**290**		0.2	**14**		0.2	**14**		0.2	**3**		0.2	**5**		0.2
Trichloroethene	5		**470**		2	**1,200**		1	**14**		0.2	**33**		0.2	**210**		0.2	**210**		0.2	**250**		0.2	**290**		0.2
Vinyl Chloride	2		ND		0.4	2		0.4	ND		0.4	ND		0.4	ND		0.4	ND		0.4	**2**		0.4	ND		0.4
Semivolatile Organic Compounds																										
1,4-Dioxane	6.1		**24**		2	**38**		2	ND		2	**6**		2	**7**		2	**7**		2	**20**		2	**15**		2
Dissolved Metals																										
Antimony	6		ND		0.41	**0.72**	**J**	0.45	ND		0.40	**0.52**	**J**	0.40	ND		0.40	ND		0.40	ND		0.40	ND		0.40
Arsenic	10		**0.94**	**J**	0.68	**1.6**	**J**	0.72	**10.3**		0.73	ND		0.73	**1.5**	**J**	0.73	**1.8**	**J**	0.73	**14.2**		0.73	**12.9**		0.73
Manganese	217		**1.6**		1.1	**52.6**		0.99	**46.6**		0.99	**49.6**		0.99	ND		0.99	ND		0.99	44.6		0.99	**46.2**		0.99
Thallium	0.5		ND		0.11	ND		0.12	ND		0.16	ND		0.16	ND		0.16	ND		0.16	ND		0.16	ND		0.16

		CLIENT ID:	MW-5S			MW-5I			MW-5D			MW-5XD			MW-6S			MW-7S			MW-13D			MW-14I		
		LAB ID:	1053052			1053051			1055947			1053053			1055946			1055945			1050128			9589413		
		COLLECTION DATE:	5/6/2019			5/6/2019			5/8/2019			5/6/2019			5/8/2019			5/8/2019			5/2/2019			5/2/2018		
		SAMPLE MATRIX:	Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater		
		SAMPLE UNITS:	µg/L			µg/L			µg/L			µg/L			µg/L			µg/L			µg/L			µg/L		
Analyte	Cleanup Standard* (µg/L)		Result	Q	MDL	Result	Q	MDL	Result	Q	MDL	Result	Q	MDL	Result	Q	MDL	Result	Q	MDL	Result	Q	MDL	Result	Q	MDL
Volatile Organic Compounds																										
Carbon Tetrachloride	5		ND		0.2	ND		0.2	ND		0.2	ND		0.2	ND		0.2	ND		0.2	ND		0.2	ND		0.2
1,2-Dichloroethane	5		ND		2	ND		2	ND		2	ND		2	ND		2	ND		2	ND		2	ND		2
1,1- Dichloroethene	7		ND		0.2	**22**		0.2	**40**		0.2	ND		0.2	ND		0.2	ND		0.2	ND		0.2	ND		0.2
cis-1,2-Dichloroethene	70		**8**		0.2	**1**		0.2	**4**		0.2	ND		0.2	ND		0.2	ND		0.2	ND		0.2	ND		0.2
Tetrachloroethene	5		**5**		0.2	**4**		0.2	**3**		0.2	ND		0.2	ND		0.2	ND		0.2	ND		0.2	ND		0.2
Trichloroethene	5		**30**		0.2	**49**		0.2	**140**		0.2	ND		0.2	**0.9**	J	0.2	**2**		0.2	ND		0.2	ND		0.2
Vinyl Chloride	2		ND		0.4	ND		0.4	ND		0.4	ND		0.4	ND		0.4	ND		0.4	ND		0.4	ND		0.4
Semivolatile Organic Compounds																										
1,4-Dioxane	6.1		ND		2	**4**	**J**	2	**5**		2	ND		2	ND	Q1	2	ND	Q1	2	ND		2	ND		2
Dissolved Metals																										
Antimony	6		**0.40**	**J**	0.4	**0.41**	**J**	0.40	ND		0.40	ND		0.40	**0.69**	**J**	0.4	ND		0.4	ND		0.41	ND		0.41
Arsenic	10		**26.3**		0.73	**8.9**		0.73	**18.5**		0.73	**17.4**		0.73	**1.5**	**J**	0.73	ND		0.73	**15.2**		0.68	**4.3**		0.68
Manganese	217		**867**		0.99	**208**		0.99	**24**		0.99	**27.1**		0.99	**65.2**		0.99	**2.1**	**J**	0.99	**18.3**	J	1.1	**1.4**	**J**	1.1
Thallium	0.5		**0.17**	**J**	0.16	ND		0.16	ND		0.16	ND		0.16	ND		0.16	ND		0.16	ND		0.11	ND		0.11

Notes:
* Cleanup Standard as listed in Record of Decision.
** Dup-20190503 collected at MW-11B
Dup-20190507 collected at MW-3B
MDL: Medium Detection Limit
Q: Lab Qualifier
J: Indicates an estimated value between the MDL and the Practical Quantitation Limit (PQL) for the analyte.
Q1: :Lab Control Sample/Lab Control Sample Duplicate High
Bolded values indicate results greater than MDL.
Highlighted values indicate results exceed the cleanup standard.
ND: Non Detect

Table 1a
Groundwater Sampling Results - May 2019
North Penn Area 2 Superfund Site
Hatfield Township, Pennsylvania

	CLIENT ID:	MW-9I			MW-11A			MW-11B			DUP-20190503**			MW-11C			MW-13S			MW-13I		
	LAB ID:	1050137			1050132			1050133			1050135			1050134			1050126			1050127		
	COLLECTION DATE:	5/3/2019			5/3/2019			5/3/2019			5/3/2019			5/3/2019			5/2/2019			5/2/2019		
	SAMPLE MATRIX:	Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater		
	SAMPLE UNITS:	µg/L			µg/L			µg/L			µg/L			µg/L			µg/L			µg/L		
Analyte	Cleanup Standard* (µg/L)	Result	Q	MDL	Result	Q	MDL	Result	Q	MDL	Result	Q	MDL	Result	Q	MDL	Result	Q	MDL	Result	Q	MDL
Volatile Organic Compounds																						
Carbon Tetrachloride	5	ND		0.2	ND		0.2	ND		0.2	ND		0.2	ND		0.2	ND		0.2	ND		0.2
1,2-Dichloroethane	5	ND		2	ND		2	ND		2	ND		2	ND		2	ND		2	ND		2
1,1- Dichloroethene	7	ND		0.2	ND		0.2	ND		0.2	ND		0.2	ND		0.2	ND		0.2	ND		0.2
cis-1,2-Dichloroethene	70	ND		0.2	ND		0.2	ND		0.2	ND		0.2	ND		0.2	ND		0.2	ND		0.2
Tetrachloroethene	5	ND		0.2	ND		0.2	ND		0.2	ND		0.2	ND		0.2	ND		0.2	ND		0.2
Trichloroethene	5	ND		0.4	ND		0.2	**0.3**	**J**	0.2	**0.4**	**J**	0.2	ND		0.2	ND		0.2	ND		0.2
Vinyl Chloride	2	ND		0.2	ND		0.4	ND		0.4	ND		0.4	ND		0.4	ND		0.4	ND		0.4
Semivolatile Organic Compounds																						
1,4-Dioxane	6.1	ND		2	ND		2	ND		2	ND		2	ND		2	ND		2	ND		2
Dissolved Metals																						
Antimony	6	ND		0.41	ND		0.41	ND		0.41	ND		0.41	ND		0.41	ND		0.41	ND		0.41
Arsenic	10	**3.8**		0.68	**0.75**	**J**	0.68	**1.1**	**J**	0.68	**1.0**	**J**	0.68	**3.5**		0.68	**2.7**		0.68	**7.2**		0.68
Manganese	217	ND		1.1	ND		1.1	ND		1.1	ND		1.1	**23.8**		1.1	**14.2**	**J**	1.1	**39.7**		1.1
Thallium	0.5	ND		0.11	ND		0.11	ND		0.11	ND		0.11	ND		0.11	ND		0.11	ND		0.11

	CLIENT ID:	PCGW-2			PW-3		
	LAB ID:	1050129			1050124		
	COLLECTION DATE:	5/2/2019			5/1/2019		
	SAMPLE MATRIX:	Groundwater			Groundwater		
	SAMPLE UNITS:	µg/L			µg/L		
Analyte	Cleanup Standard* (µg/L)	Result	Q	MDL	Result	Q	MDL
Volatile Organic Compounds							
Carbon Tetrachloride	5	ND		0.2	ND		0.2
1,2-Dichloroethane	5	ND		2	ND		2
1,1- Dichloroethene	7	ND		0.2	**160**		0.2
cis-1,2-Dichloroethene	70	ND		0.2	**9**		0.2
Tetrachloroethene	5	ND		0.2	**62**		0.2
Trichloroethene	5	ND		0.2	**460**		0.2
Vinyl Chloride	2	ND		0.4	ND		0.4
Semivolatile Organic Compounds							
1,4-Dioxane	6.1	ND		2	**15**		2
Dissolved Metals							
Antimony	6	ND		0.41	ND		0.41
Arsenic	10	**4.8**		0.68	**3.1**		0.68
Manganese	217	**91.3**		1.1	**42.3**		1.1
Thallium	0.5	ND		0.11	ND		0.11

Notes:
* Cleanup Standard as listed in Record of Decision.
** Dup-20190503 collected at MW-11B
Dup-20190507 collected at MW-3B
MDL: Medium Detection Limit
Q: Lab Qualifier
J: Indicates an estimated value between the MDL and the Practical Quantitation Limit (PQL) for the analyte.
Q1: :Lab Control Sample/Lab Control Sample Duplicate High
Bolded values indicate results greater than MDL.
Highlighted values indicate results exceed the cleanup standard.
ND: Non Detect

Table 2
Surface Water Sampling Results - May 2019
North Penn Area 2 Superfund Site
Hatfield Township, PA

	CLIENT ID:	SMP-0			SMP-1			SMP-2			SMP-3		
	LAB ID:	1076757, 1046758			1046755, 1046756			1046753, 1046754			1046751, 1046752		
	COLLECTION DATE:	5/1/2019			5/1/2019			5/1/2019			5/1/2019		
	SAMPLE MATRIX:	Surface Water			Surface Water			Surface Water			Surface Water		
	SAMPLE UNITS:	µg/L			µg/L			µg/L			µg/L		
Analyte	Surface Water Criteria* (µg/L)	Result	Q	MDL	Result	Q	MDL	Result	Q	MDL	Result	Q	MDL
Volatile Organic Compounds													
Carbon Tetrachloride	0.23	ND		0.06	ND		0.06	ND		0.06	ND		0.06
1,2-Dichloroethane	0.38	ND		0.05	ND		0.05	ND		0.05	ND		0.05
1,1-Dichloroethene	33	ND		0.05	ND		0.05	ND		0.05	ND		0.05
Tetrachloroethene	0.69	ND		0.05	ND		0.05	ND		0.05	ND		0.05
Trichloroethene	2.5	ND		0.05	ND		0.05	**0.07**	**J**	0.05	**0.1**	**J**	0.05
Vinyl Chloride	0.025	ND		0.020	ND		0.020	ND		0.020	ND		0.020
Dissolved Metals													
Chromium	NA**	ND		5.3	ND		5.3	ND		5.3	ND		5.3
Trivalent Chromium waters	101	ND		10.0	ND		10.0	ND		10.0	ND		10
Hexavalent Chromium	**	ND		10.0	ND		10.0	ND		10.0	ND		10
Zinc	163	ND		3.0	ND		3.0	ND		3.0	**3.1**	**J**	3
Cadmium	0.32	ND		0.15	ND		0.15	ND		0.15	ND		0.15
Lead	3.79	ND		1.1	ND		1.1	ND		1.1	ND		1.1
Total Metals													
Antimony	5.6	ND		0.41	ND		0.41	ND		0.41	ND		0.41
Arsenic	10	ND		0.68	ND		0.68	ND		0.68	**0.80**	**J**	0.68
Thallium	0.24	ND		0.11	ND		0.11	ND		0.11	ND		0.11

Notes:
* Criteria are the lower value of the Fish and Aquatic Life Continuous Criteria and the Human Health Criteria. See Table 1 in Remedial Action Sampling and Analysis Plan.
** Chromium III = Total Chromium - Hexavalent Chromium. Calculation performed by the laboratory.
Only Chromium III is needed for the site requirements
MDL: Method Detection Limit
Q: Lab Qualifier
J: Indicates an estimated value between the MDL and the Practical Quantitation Limit (PQL) for the analyte.
Bold values indicate results greater than MDL.
Highlighted values indicate results exceed the cleanup standard.
ND: Not Detected
NS: Not Sampled

Table 3
Performance Data for PW-1 and PW-3 Operation
North Penn Area 2 Superfund Site
Hatfield Township, Pennsylvania
Updated 19 July 2019

Date and Time	Totalizer Reading (gal)	Total Flow (gal)	Average Flow for Period (gpm)	Average Flow for Period (gpd)	Total VOC Conc in Well (ug/l)	Cumulative Pounds VOCs Removed	Efficiency - Pounds removed/ 100K gal	Removal Rate - Pounds/ year @ 20,000 gpd
PW-1 Operation								
01/01/01 12:00								
04/28/02 14:00		9,641,700	13.9	20,000	**809**	65	0.7	49
PW-3 Operation								
12/14/02 15:56	3,470,840	5,945,840	14.8	21,326	4,170	240	3.5	254
12/04/03 11:00	10,897,332	13,372,332	14.0	20,138	**3,351**	472	2.8	204
12/21/04 08:30	18,837,960	21,312,960	14.0	20,171	1,619	627	1.4	99
11/07/05 16:03	25,622,360	28,097,360	15.3	21,978	1,602	727	1.3	98
12/18/06 08:00	3,147,400	36,874,830	30.1	43,276	2,000	846	1.7	122
12/10/07 10:04	10,148,650	43,876,080	12.2	17,556	**1,618**	965	1.4	99
12/11/08 10:27	6,734,020	51,983,032	14.5	20,828	**869**	1,050	0.7	53
11/30/09 07:45	4,145,450	59,125,462	14.1	20,356	981	1,110	0.8	60
12/23/10 15:01	1,820,650	67,867,920	17.4	25,049	659	1,171	0.5	40
12/15/11 09:35	4,307,990	76,695,207	17.4	25,125	**725**	1,221	0.6	44
12/13/12 08:28	2,264,504	84,044,677	14.1	20,321	693	1,261	0.6	42
12/19/13 09:42	9,025,402	90,805,575	9.8	14,128	803	1,306	0.7	49
12/30/14 09:38	16,676,354	98,456,527	10.3	14,818	745	1,355	0.6	45
12/22/15 09:20	23,608,432	105,388,605	13.0	18,650	753	1,396	0.6	46
12/06/16 07:30	30,673,869	112,454,042	13.9	20,014	**730**	1,444	0.6	44
12/07/17 10:30	38,320,799	120,100,972	13.9	19,988	828	1,499	0.7	50
12/11/18 13:36	45,770,469	127,550,642	15.8	22,799	**713**	1,548	0.6	43
01/11/19 09:30	46,451,677	128,231,850	15.6	22,459	702	1,551	0.6	43
02/04/19 11:00	47,011,094	128,791,267	16.1	23,248	702	1,555	0.6	43
03/13/19 15:45	47,834,238	129,614,411	15.4	22,129	702	1,560	0.7	49
04/04/19 08:45	48,306,489	130,086,662	15.1	21,754	702	1,562	0.7	49
05/09/19 00:10	49,133,509	130,913,682	16.6	23,873	**691**	1,567	0.7	49
06/14/19 11:30	49,862,610	131,642,783	13.9	19,991	691	1,571	0.7	49

Key Dates

3/18/10 - Pump pulled and cleaned; new Totalizer/Flow Meter installed.
3/18/10 cont. - End reading = 6,208,500 gal; new meter start at 0 gal.
5/20/10 - Replaced liquid (non-motor) end of the pump (Goulds 18GS07).
9/9/10 - Penn Color reported the pump stopped working in the morning.
9/15/10 - Installed new pump (Goulds 18GS10422C, 1hp). Replaced pump control box with 15A breaker and enclosure (previous control box not rated for 1hp motor).
10/19/10 - Flow meter problem observed.
10/21/10 - New totalizer/flow meter installed. End reading = 4,858,758; New meter start at 0 gal.
4/8/11 - Due to site transformer problem disrupting electric power supply to pump, pump did not operate for approx. 1 day.
5/17/11 - PW-3 sampled during Remedial Design groundwater monitoring event. Value listed in table on 5/16/11 date.
6/22/11 - New totalizer/flow meter installed. End reading = 6,339,947; New meter start at 0 gal.
6/19/12 - New flow meter and automated system installed (RA implementation). End reading = 8,158,592 gal; New meter start at 0 gal.
8/30/12 - Data indicate pump did not operate 7/18/12 17:35 through 7/23/12 08:50, or 7/26/12 19:20 through 7/27/12 11:05. Alerts programming issues still being investigated.
8/30/12 - Flow meter total reset to 0 gal. End reading prior to reset = 1,234,364 gal.
11/8/12 - The October reading was delayed due to Hurricane Sandy.
10/7/13 - The pump was cleaned to try to increase the flow rate.
12/29/13 - The pump stopped working.
1/8/14 - Removed old pump and riser pipe. Riser pipe restricted due to buildup. Identified the need for 3-phase motor.
1/10/14 - Installed new pump (Goulds 18GS10422C, 1hp, with 3-phase 230V motor CentriPro M10432 100C313) and new 1" 160 psi black poly riser pipe.
12/26/14 - 12/30/14 - Pump shut down due to full bag filter on Penn E&R treatment system.
2/27/15 - The pump had been shut down for a period of time due to full bag filter on Penn E&R treatment system.
3/10/15 - Replaced pump motor (Goulds 18GS10, serial # A1549302) and riser pipe. Pump set at 100' bgs.
3/29/16 - Replaced pump wet end (Goulds 18GS10, 8 stage, 4", 1HP), not the motor, and riser pipe. Pump set at 100' bgs.
3/28/17 - Replaced pump wet end (Goulds 18GS10, 8 stage, 4", 1HP), not the motor, and riser pipe. Pump set at 100' bgs.
1/9/18 - Replaced pump wet end (Goulds 18GS10, 8 stage, 4", 1HP), not the motor, and riser pipe. Pump set at 100' bgs.
11/8/18 - Replaced pump wet end (Goulds 18GS10, 8 stage, 4", 1HP), not the motor, and riser pipe. Pump set at 100' bgs.
6/26/19 - Replaced pump wet end (Goulds 18GS10, 8 stage, 4", 1HP), not the motor, and riser pipe. Pump set at 100' bgs.

Total VOC Concentration Basis

Values in **bold** are actual sample results.
Values for dates between samples are the average of the two samples.
Values after the most recent sample date are roll-forward values and will be updated once the next sample result is obtained.

Notes: Results from 6/1/05 through 12/15/11 include Freon 113 (typically <10 ug/l) and TCFM (typically <20 ug/l) which were not previously included in total VOCs.
For 2002 - 2018, spreadsheet rows compressed (hidden) to show only last data for the year in order to save space on table, but all data are preserved.

Table 4
Performance Data for MW-2 Operation
North Penn Area 2 Superfund Site
Hatfield Township, Pennsylvania
Updated 19 July 2019

Date and Time	Pump Cycle Count	Total Flow (gal) - 0.07 gal/cycle	Average Flow for Period (gpm)	Average Flow for Period (gpd)	Total VOC Conc in Well (ug/l)	Cumulative Pounds VOCs Removed	Efficiency - Pounds removed/ 100K gal	Removal Rate - Pounds/ year @ 400 gpd
MW-2 Operation								
12/21/04 08:30	1,600,000	112000	0.403	581	19,528	17.5	16.3	24
11/07/05 16:03	3,412,970	238908	0.513	739	15,150	40.2	12.6	18
12/18/06 08:00	6,997,105	489797	0.069	99	14,205	68.8	11.9	17
02/05/07 10:07	6,997,107	489797	0.000	0	14,205	68.8	11.9	17
03/05/07 10:30	6,997,129	489799	0.000	0	14,205	68.8	11.9	17
04/11/07 08:17	6,997,131	489799	0.000	0	14,205	68.8	11.9	17
05/04/07 09:45	6,997,131	489799	0.000	0	14,205	68.8	0.0	0
07/17/07 10:29	6,997,131	489799	0.000	0	14,205	68.8	0.0	0
10/10/07 09:51	6,997,131	489799	0.000	0	14,205	68.8	0.0	0
12/10/07 10:14	6,997,131	489799	0.000	0	14,205	68.8	0.0	
01/29/08 11:30	6,997,131	489799	0.000	0	14,205	68.8	0.0	0
02/01/08 11:12	6,997,131	489799	0.000	0	14,205	68.8	0.0	0
03/26/08 10:20	6,997,131	489799	0.000	0	14,205	68.8	0.0	0
05/08/08 15:52	7,189,630	489799	0.000	0	14,205	68.8	0.0	0
05/14/08 10:41	7,266,435	495176	0.645	930	**27,166**	70.0	22.7	33
06/26/08 09:50		Well pumping intermittently. Pump cycle counter not representative of volume pumped.						0
07/08/08 13:37	7,876,790	Pump repaired; well back online						0
07/29/08 09:43	NR	Well not pumping. Pump cycle counter not representative of volume pumped.						0
08/06/08 10:10	NR	Well not pumping.						0
08/20/08 10:42	NR	Well not pumping.						0
09/12/08 10:50	8,503,462	495176						0
09/19/08 10:05	8,569,184	499776	0.458	660	18,643	70.7	15.6	23
11/14/08 10:20	9,120,879	538395	0.479	689	18,643	76.7	15.6	23
12/02/08 09:53	9,253,791	547699	0.359	517	18,643	78.2	15.6	23
12/10/08 10:22	9,311,832	551761	0.352	507	18,643	78.8	15.6	23
12/11/08 10:24	9,324,448	552645	0.612	882	**10,120**	78.9	8.4	12
11/30/09 07:42	11,333,363	693269	0.241	347	16,266	91.4	13.6	20
11/17/10 09:16	12,952,765	806627	0.007	10	**9,357**	105.0	7.8	11
12/23/10 15:01	13,040,011	812734	0.107	154	9,531	105.5	8.0	12
12/15/11 09:35	14,454,676	911761	0.537	773	**11,822**	114.0	9.9	14
12/13/12 08:28	17,751,367	1142529	0.481	693	10,889	130.2	9.1	13
12/19/13 09:42	21,099,680	1376911	0.425	612	15,413	158.4	12.9	19
12/30/14 09:38	23,758,563	1563033	0.381	549	10,822	180.2	9.0	13
12/22/15 09:20	969,132	1630876	0.175	251	4,392	184.3	3.7	5
12/06/16 07:30	2,928,310	1768018	0.232	334	**2,327**	188.4	1.9	3
12/07/17 10:30	5,265,210	1931601	0.309	445	2,655	193.7	2.2	3
12/11/18 13:36	7,963,197	2120461	0.424	611	**1,867**	196.8	1.6	2
01/11/19 09:30	8,226,667	2138903	0.415	598	1,370	197.1	1.1	2
02/04/19 11:00	8,393,683	2150595	0.337	486	1,370	197.2	1.2	2
03/13/19 15:45	8,413,728	2151998	0.026	38	1,370	197.2	1.1	2
03/25/19 12:30	8,430,235	2153153	0.068	97	1,370	197.2	0.1	0
03/25/19 12:50	14	2153154	0.049	71	1,370	197.2	1.1	2
04/04/19 08:45	54,999	2157003	0.160	231	1,370	197.3	1.1	2
05/09/19 00:10	319,797	2175539	0.372	535	**872**	197.4	0.8	1
06/14/19 11:30	615,212	2196218	0.394	567	872	197.6	0.7	1

Key Dates

1/27/10 - Pump was shut down by Penn Color for previous 36 hours, due to rain flooding event.
3/18/10 - Pump pulled and cleaned; replaced pressure gage.
9/15/10 - Pump pulled and cleaned.
10/15/10 - Pump reading indicated pump no functioning.
10/21/10 - Pump inspected and determined to be unfixable.
11/8/10 - Replacement pump installed (QED AP2B Short).
5/17/11 - MW-2 sampled during Remedial Design groundwater monitoring event. Value listed in table on 5/16/11 date.
6/22/11 - Pump operating but reading not obtained; so used average of adjacent table values.
9/27/11 - Pump operating but reading not obtained; so used average of adjacent table values.
6/19/12 - Pump operating but reading not obtained; so used average of adjacent table values.
11/8/12 - The October reading was delayed due to Hurricane Sandy.
4/7/15 - Replaced cycle counter. It was discovered to have been malfunctioning since sometime in January, though the pump had been operating correctly.
2/4/19 - MW-2S was discovered to be not pumping during February O&M visit. Issues with air supply and regulator were resolved. Pumping resumed.
3/25/19 - Replaced cycle counter. Pre-replacement reading: 8,430,235, Post replacement reading: 0,000,014

Total VOC Concentration Basis

Values in **bold** are actual sample results.
Values for dates between samples are the average of the two samples.
Values after the most recent sample date are roll-forward values and will be updated once the next sample result is obtained.

Notes: Results from 6/1/05 on include Freon 113 (7 ug/l) and TCFM (19 ug/l) which were not previously included in total VOCs.
For 2002 - 2018 spreadsheet rows compressed (hidden) to show only last data for the year in order to save space on table, but all data are preserved.

Table 5
Performance Data for All Recovery Wells
North Penn Area 2 Superfund Site
Hatfield Township, Pennsylvania
Updated 19 July 2019

Pumps Operated	Date and Time	Cumulative Pounds VOCs Removed	% of VOCs Removed	Estimated Pounds VOCs Remaining	Total Flow	Average Flow for Period (gpd)
PW-1	01/01/01 12:00			2,576		
	04/28/02 14:00	65	2.6%	2,511		20,000
PW-3	04/29/02 14:00			2,511		
	12/14/02 15:56	240	9.6%	2,271		21,326
	12/04/03 11:00	472	18.8%	2,039		20,138
PW-3 & MW-2	08/16/04 12:10	593	23.6%	1,918		22,605
	12/21/04 08:30	644	25.7%	1,867		20,751
	11/07/05 16:03	767	30.5%	1,744		22,717
	12/18/06 08:00	915	36.4%	1,596	37,364,627	43,375
	12/10/07 10:04	1,034	41.2%	1,477	44,365,879	17,556
	12/11/08 10:27	1,129	45.0%	1,382	52,535,677	21,710
	11/30/09 07:45	1,201	47.8%	1,310	59,818,731	20,703
	12/23/10 15:01	1,277	50.9%	1,234	68,680,654	23,429
	12/15/11 09:35	1,335	53.2%	1,176	77,606,968	25,898
	12/13/12 08:28	1,392	55.4%	1,119	85,187,206	21,014
	12/19/13 09:42	1,464	58.3%	1,047	92,182,486	14,739
	12/30/14 09:38	1,535	61.1%	976	100,019,560	15,367
	12/22/15 09:20	1,581	62.9%	930	107,019,481	18,901
	12/06/16 07:30	1,632	65.0%	879	114,222,060	20,348
	12/07/17 10:30	1,692	67.4%	818	122,032,573	20,432
	12/11/18 13:36	1,745	69.5%	766	129,671,103	23,410
	01/11/19 09:30	1,748	69.6%	762	130,370,753	23,058
	02/04/19 11:00	1,752	69.8%	759	130,941,862	23,734
	03/13/19 15:45	1,757	70.0%	754	131,766,409	22,166
	04/04/19 08:45	1,759	70.1%	751	132,239,815	21,852
	05/09/19 00:10	1,764	70.3%	747	133,066,836	23,944
	06/14/19 11:30	1,769	70.4%	742	133,799,786	20,221
				Average (~last 6 months)		20,631

Notes: For 2002 - 2018 spreadsheet rows compressed to show only last data for the year in order to save space on table, but all data are preserved.

8/30/12 - PW-3 flow meter reading/programming issue.

Table 6
Water Level Data: 1 May 2019
North Penn Area 2 Superfund Site
Hatfield Township, Pennsylvania

Date	Well	Top of Casing Elevation (ft amsl)	Depth to Water (ft below top of inner casing)	Water Level Elevation (ft amsl)	Notes
5/1/2019	MW-1	354.34	15.11	339.23	
5/1/2019	MW-1D	354.22	18.47	335.75	
5/1/2019	MW-1I	354.3	14.37	339.93	
5/1/2019	MW-2D	353.38	22.76	330.62	
5/1/2019	MW-2I	353.13	21.27	331.86	
5/1/2019	MW-3A	348.72	17.69	331.03	
5/1/2019	MW-3B	353.18	22.26	330.92	
5/1/2019	MW-3C	348.59	18.94	329.65	
5/1/2019	MW-3D	348.88	14.38	334.5	
5/1/2019	MW-4D	353.51	10.93	342.58	
5/1/2019	MW-4S	354.5	11.75	342.75	
5/1/2019	MW-5D	349.12	14.37	334.75	
5/1/2019	MW-5I	348.84	13.80	335.04	
5/1/2019	MW-5S	346.68	11.14	335.54	
5/1/2019	MW-5XD	348.73	13.73	335	
5/1/2019	MW-6S	347.23	11.75	335.48	
5/1/2019	MW-7S	350.28	10.55	339.73	
5/1/2019	MW-8D	363.08	8.21	354.87	
5/1/2019	MW-8S	362.72	8.44	354.28	
5/1/2019	MW-9D	347.99	4.36	343.63	
5/1/2019	MW-9I	348.63	4.95	343.68	
5/1/2019	MW-9S	347.64	3.99	343.65	
5/1/2019	MW-10D	354.66	15.83	338.83	
5/1/2019	MW-10I	355.13	13.60	341.53	
5/1/2019	MW-10S	354.29	13.97	340.32	
5/1/2019	MW-11A	344.14	4.36	339.78	
5/1/2019	MW-11B	344.2	4.52	339.68	
5/1/2019	MW-11C	343.89	4.96	338.93	
5/1/2019	MW-12A	355.31	11.26	344.05	
5/1/2019	MW-12B	354.91	9.11	345.8	
5/1/2019	MW-13D	342.2	6.57	335.63	
5/1/2019	MW-13I	340.89	6.58	334.31	
5/1/2019	MW-13S	341.78	7.62	334.16	
5/1/2019	MW-14D	351.51	8.20	343.31	
5/1/2019	MW-14I	351.79	8.40	343.39	
5/1/2019	MW-14S	351.91	8.35	343.56	
5/1/2019	PCGW-2	355.91	18.33	337.58	
5/1/2019	PCGW-3	353.97	7.77	346.2	
5/1/2019	PT-3	346.82	9.45	337.37	
5/1/2019	PT-6	354.53	6.27	348.26	
5/1/2019	PT-7	353.54	5.54	348	
5/1/2019	SMP-1	338.47	0.08	338.39	Reading relative to stream monitoring point
5/1/2019	SMP-1	338.47	0.20	338.27	Reading relative to stream monitoring point
5/1/2019	SMP-3	335.12	1.80	333.32	Reading relative to stream monitoring point

Table 7
PFAS Sampling Results - March 2019
North Penn Area 2 Superfund Site
Hatfield Township, Pennsylvania

Groundwater Sample Results

	CLIENT ID:	PW-3			Dup1[5]			MW-2S			Dup2[5]			EB032519[6]		
	LAB ID:	1017502			1017503			1017504			1017505			1017508		
	COLLECTION DATE:	3/25/2019			3/25/2019			3/25/2019			3/25/2019			3/25/2019		
	SAMPLE MATRIX:	Groundwater			Groundwater			Groundwater			Groundwater			Water		
	SAMPLE UNITS:	ng/L			ng/L			ng/L			ng/L			ng/L		
Analyte	Threshold for Requiring Confirmatory Sampling[4] (ng/L)	Result	Q	MDL	Result	Q	MDL	Result	Q	MDL	Result	Q	MDL	Result	Q	MDL
Perfluoroalkyl Substance																
Perfluoro-octanesulfonate (PFOS)	-	**340**		3.4	**280**		3.5	**16**		0.35	**15**		0.37	ND		0.36
Perfluorooctanoic acid (PFOA)	-	**76**		0.26	**70**		0.26	**64**		0.26	**61**		0.28	ND		0.27
Total	70	**416**			**350**			**80**			**76**			ND		

Performance Sample Results

	CLIENT ID:	PS-1[1]			PS-2[1]		
	LAB ID:	1017506			1017507		
	COLLECTION DATE:	3/20/2019			3/20/2019		
	SAMPLE MATRIX:	Water			Water		
	SAMPLE UNITS:	ng/L			ng/L		
Analyte	Certified Value[2] (ng/L)	QC Performance Acceptance Limit[3] (ng/L)	Result	Q	MDL	Result	Q	MDL
Perfluoroalkyl Substance								
Perfluoro-octanesulfonate (PFOS)	211	127 - 295	**180**		0.4	**180**		0.4
Perfluorooctanoic acid (PFOA)	151	90.6 - 211	**150**		0.3	**160**		0.3

Notes:

[1] PS-1 and PS-2 are performance evaluation samples; Product: WatR™ Supply Per- & Polyfluoroalkyl Substances (PFAS) GW & SW, Catolog Number: 731, Lot No.: S252-731.

[2] Certified Value is the actual "made-to" concentration.

[3] The QC Performance Acceptable Limit closely approximates a 95% confidence interval of the performance that experienced laboratories should achieve using accepted environmental methods.

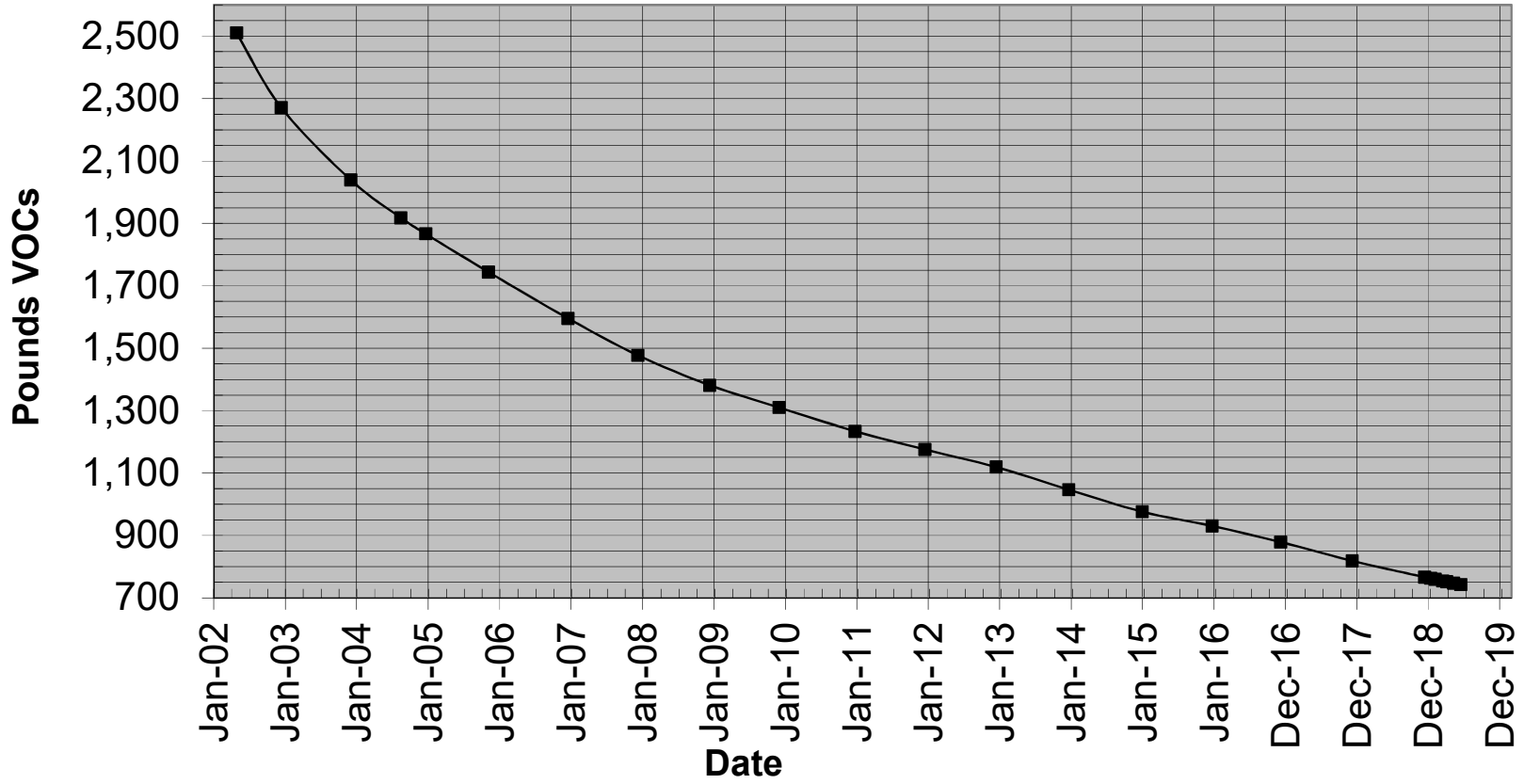
[4] Confirmatory sampling limit as listed in the Sampling and Analysis Plan Addendum for Perfluoroalkyl Substances, 29 January 2019.

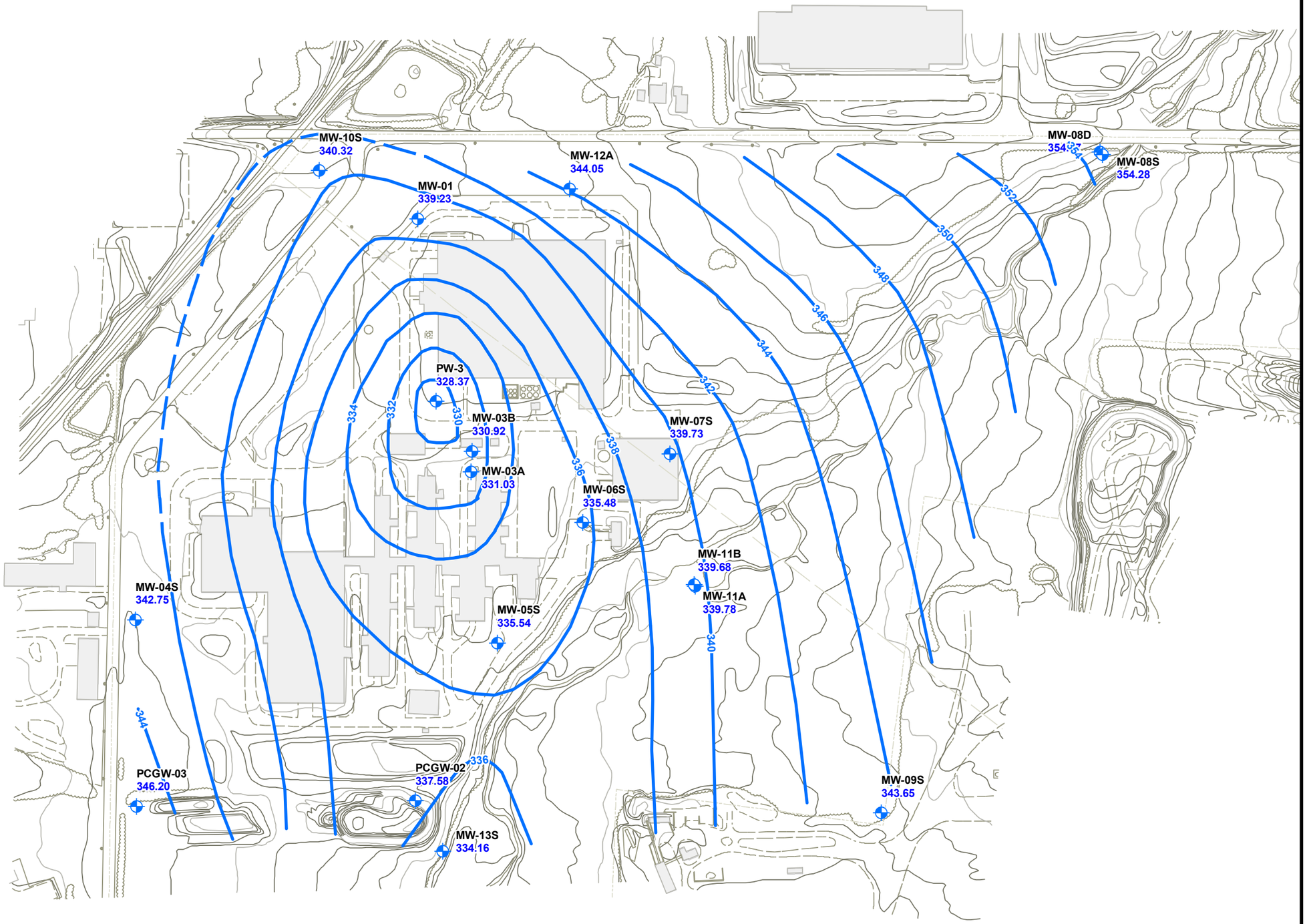
[5] Sample Dup1 is a duplicate of sample PW-3 and Dup2 is a duplicate of sample MW-2S.

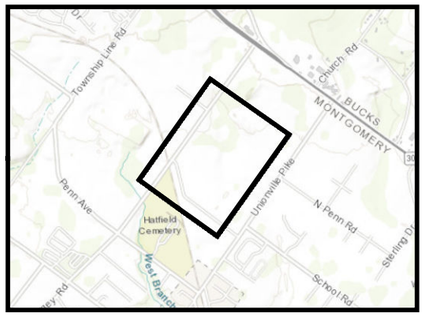
[6] Equipment blank

MDL: Method Detection Limit
Q: Lab Qualifier
All units in nanogram per liter (ng/L)
Bolded values indicate results greater than MDL.
Highlighted values indicate results exceeding the threshold for requiring confirmatory sampling.
ND: Not Detected

Figure A
North Penn Area 2 Superfund Site
Estimated Pounds VOCs Remaining







Legend

- Shallow Monitoring Well
- Potentiometric Surface Contour (2-foot Interval) – Dashed where inferred
- 344.06 Groundwater Elevation (ft-amsl)

NOTES:

1. Groundwater Elevations based on 05/01/2019 gauging event.
2. MW-02S was not gauged in May 2019.
3. DWG. NO. 1188, "Penn Color, Inc. Formerly Ametek, Inc." 4/17/2000, James M. Stewart, Inc. Land Surveyors Philadelphia, Pennsylvania

0 125 250 500
Feet

FIGURE 1
Shallow Potentiometric Contour Map
May 1, 2019
North Penn Area 2 Superfund Site
Hatfield Township, Pennsylvania

ERM

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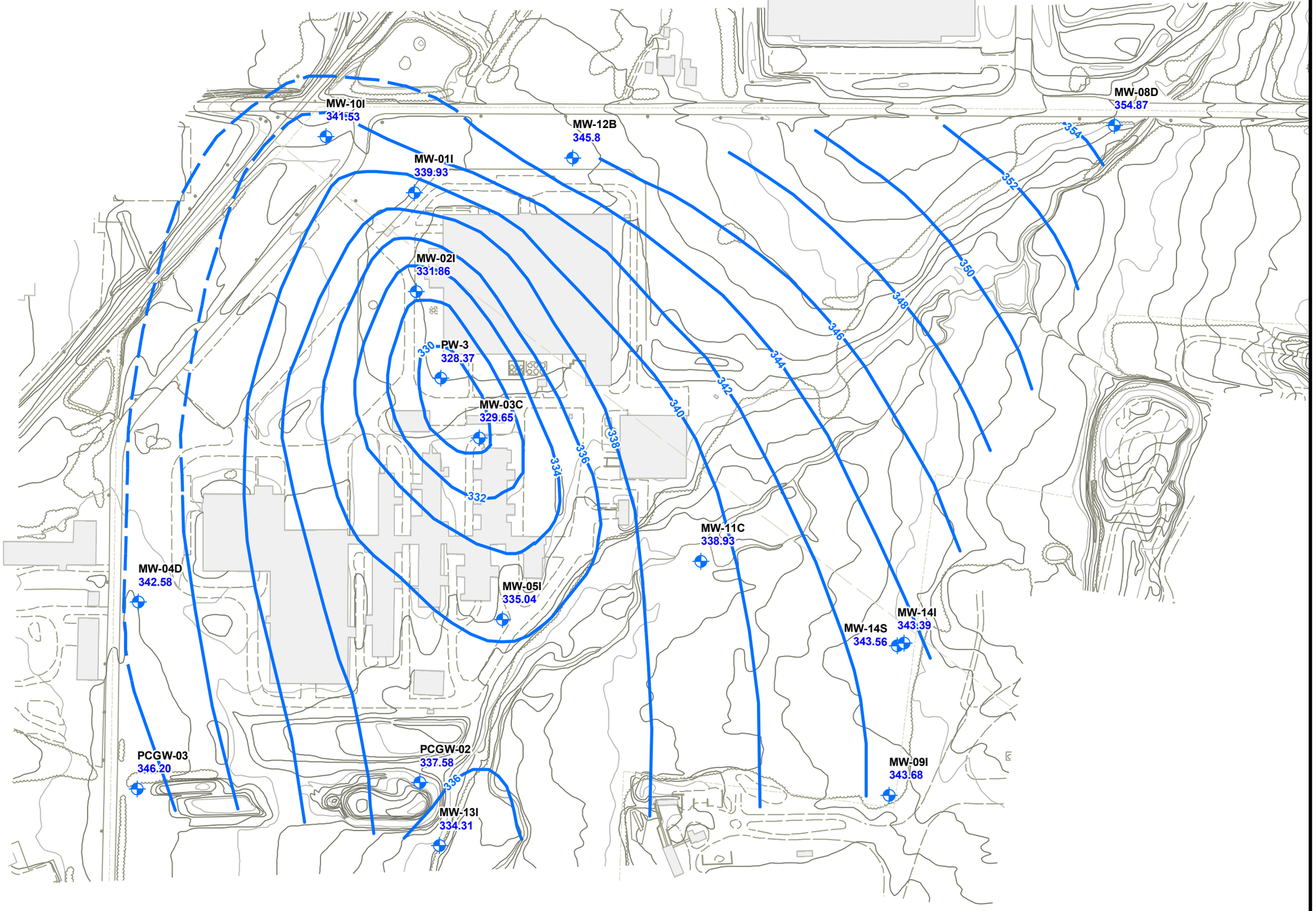

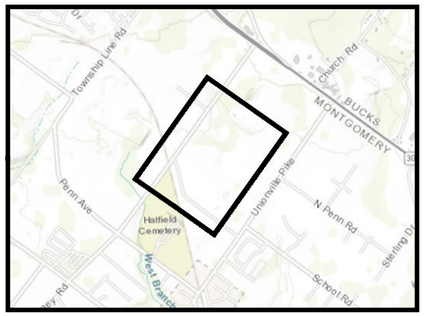

Legend

- Intermediate Monitoring Well
- Potentiometric Surface Contour (2-foot Interval) – Dashed where inferred
- 344.06 Groundwater Elevation (ft-amsl)

NOTES:

1. Groundwater Elevations based on 05/01/2019 gauging event.
2. DWG. NO. 1188, "Penn Color, Inc. Formerly Ametek, Inc." 4/17/2000, James M. Stewart, Inc. Land Surveyors Philadelphia, Pennsylvania

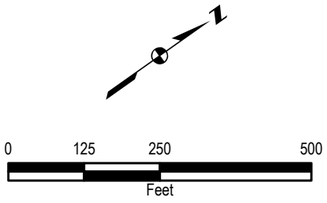

FIGURE 2
Intermediate Potentiometric Contour Map
May 1, 2019
North Penn Area 2 Superfund Site
Hatfield Township, Pennsylvania

ERM

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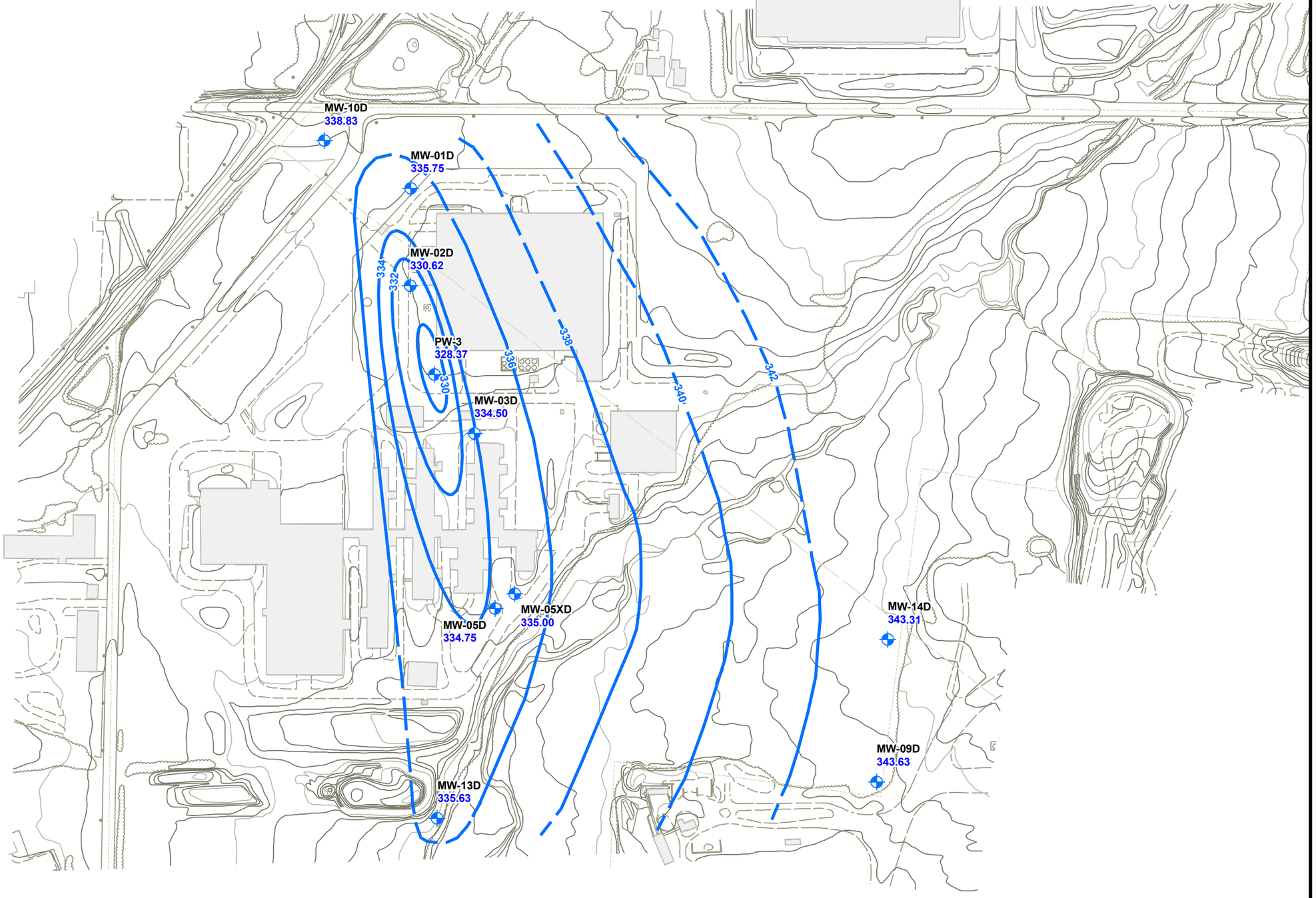

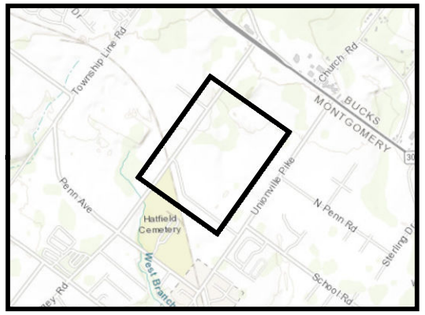

Legend

- Deep Monitoring Well
- Potentiometric Surface Contour (2-foot Interval) – Dashed where inferred
- 344.06 Groundwater Elevation (ft-amsl)

NOTES:

1. Groundwater Elevations based on 05/01/2019 gauging event.
2. DWG. NO. 1188, "Penn Color, Inc. Formerly Ametek, Inc." 4/17/2000, James M. Stewart, Inc. Land Surveyors Philadelphia, Pennsylvania

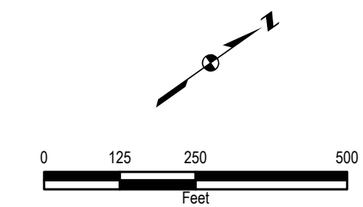

FIGURE 3
Deep Potentiometric Contour Map
May 1, 2019
North Penn Area 2 Superfund Site
Hatfield Township, Pennsylvania

ERM

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